Shaping social acceptance of energy projects

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Introduction (1/3)

Climate crisis

- Limiting GHG to limit the global rise in temperature to 1,5/2°C
- Need to design low-carbon solutions and rethink energy systems

Energy modeling

- Long service lifes of the technologies
- Design long-term scenarios
- Looking for robust and reliable scenarios (that could be actually used)

Introduction (2/3)

Social issues

- Energy projects have been hindered by local opposition
- Start research on the phenomenon and how public perception is formed
- Wide phenomenon studied mostly by social scientists

Introduction (2/2)

Goal of the PhD :
Connect the dots between energy modelling and social issues

- Two very diverse fields
- No literature linking the two topics

- Lack of social aspects in current long-term scenarios -> less realistic scenarios

First step of the PhD : Understand social acceptance of energy projects

Research question :

What are the impacts of social acceptance of energy projects on long-term modelling ?

Plan

I. Concepts involved

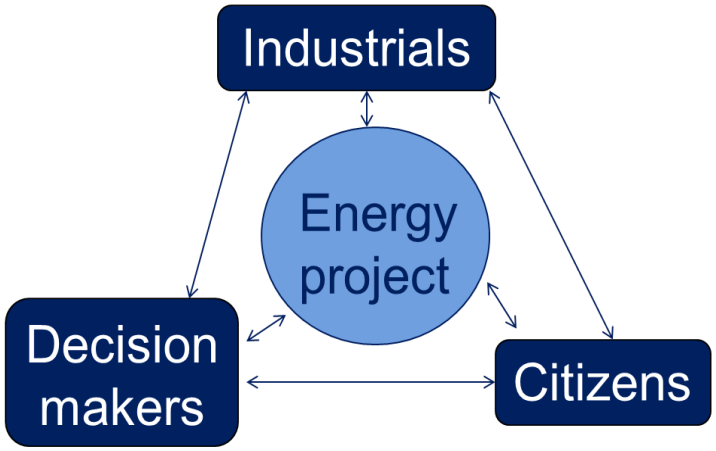
II. Analysis of the literature

III. Key issues

Concepts at stake and points of view

- Acceptance : *a posteriori* evaluation of a project
- Acceptability : *a priori* evaluation of a project
- Support : active engagement **for** a project
- Opposition : active engagement **against** a project
- NIMBY (Not In My BackYard) : Opposition between a general positive opinion and a local opposition

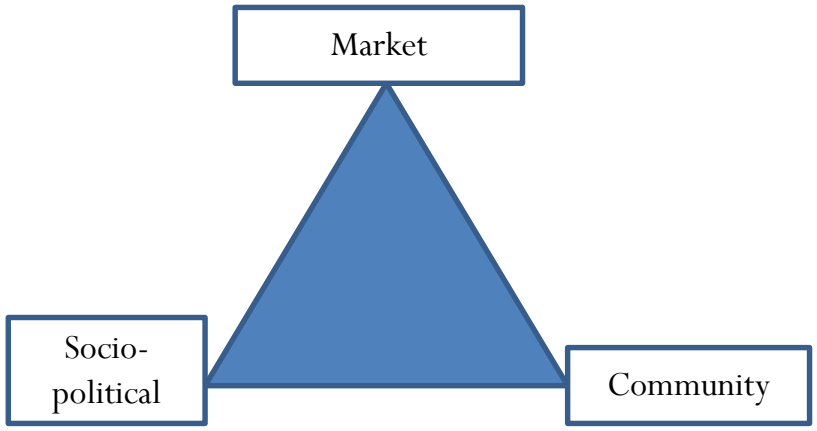
Citizens: people living near the project who might oppose or support it.
Industrials: companies locally or nationally involved in the design or the realization of the project.
Decision makers: local and national politicians who have an impact on location decisions, public investments, etc.



Three-dimensional assessment of social acceptance

Social acceptance as a three-dimensional assessment (Wüstenhagen et al, 2007):

- Community acceptance : Stakeholders concerned by a local project
- Socio-political acceptance : broad, policy making
- Market acceptance : adoption and diffusion of technologies

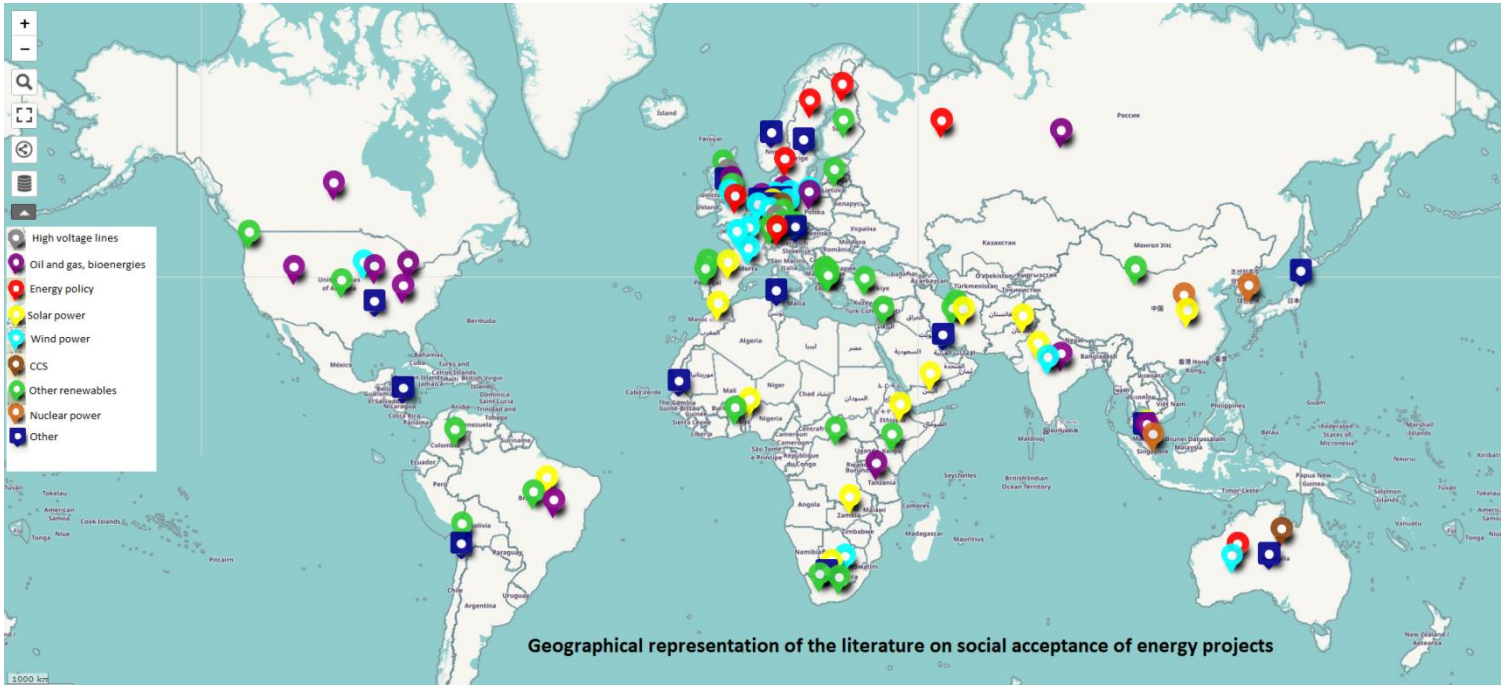


Diversity of the literature / then interest for a map

- Differences in :
  - Aim of the articles
  - Geography studied
  - Technology / kind of project studied

- Are they technologies more studied in specific areas ? Need for a geographical representation

Geographical focus



Social acceptance of energy projects: A geographical focus based on literature (based on the analysis of 96 papers)

Map analysis

Sorted by area :

- **Most studied zones:** Western Europe, Middle East, North America.
- **Average studied zones:** South America and Oceania.
- **Least studied zones:** Africa, Asia, former USSR.

Sorted by technology / policy :

- **Nuclear** mostly in **Asia.**
- **Wind power** in **Western Europe.**
- **Solar power** in developing countries.
- **Energy policy** in developed countries.
- **North America:** mostly oil & gas & bioenergies.

Extracting social acceptance characteristics to feed the energy model

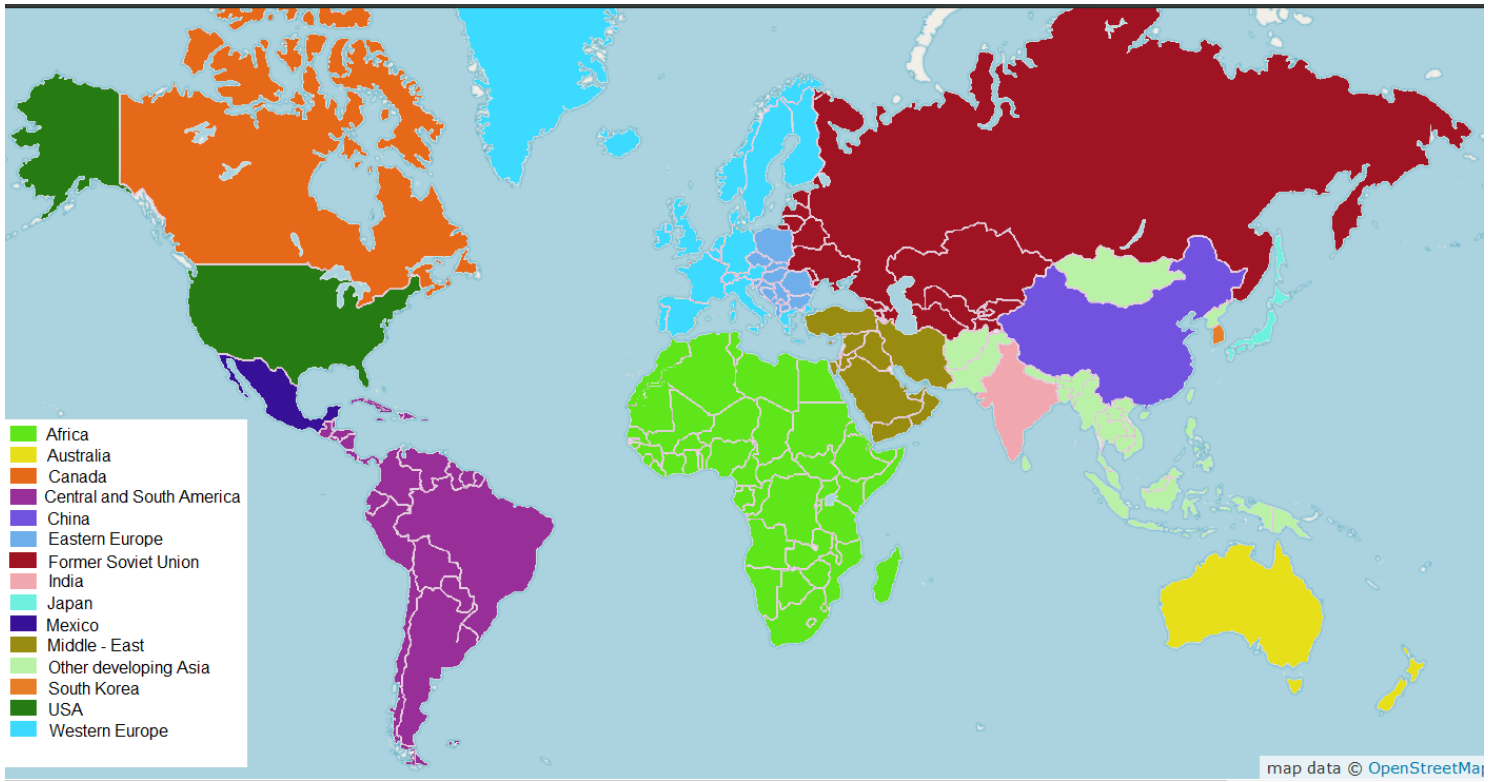
Goal :

Extracting key parameters that explain social acceptance to feed the energy model

Method :

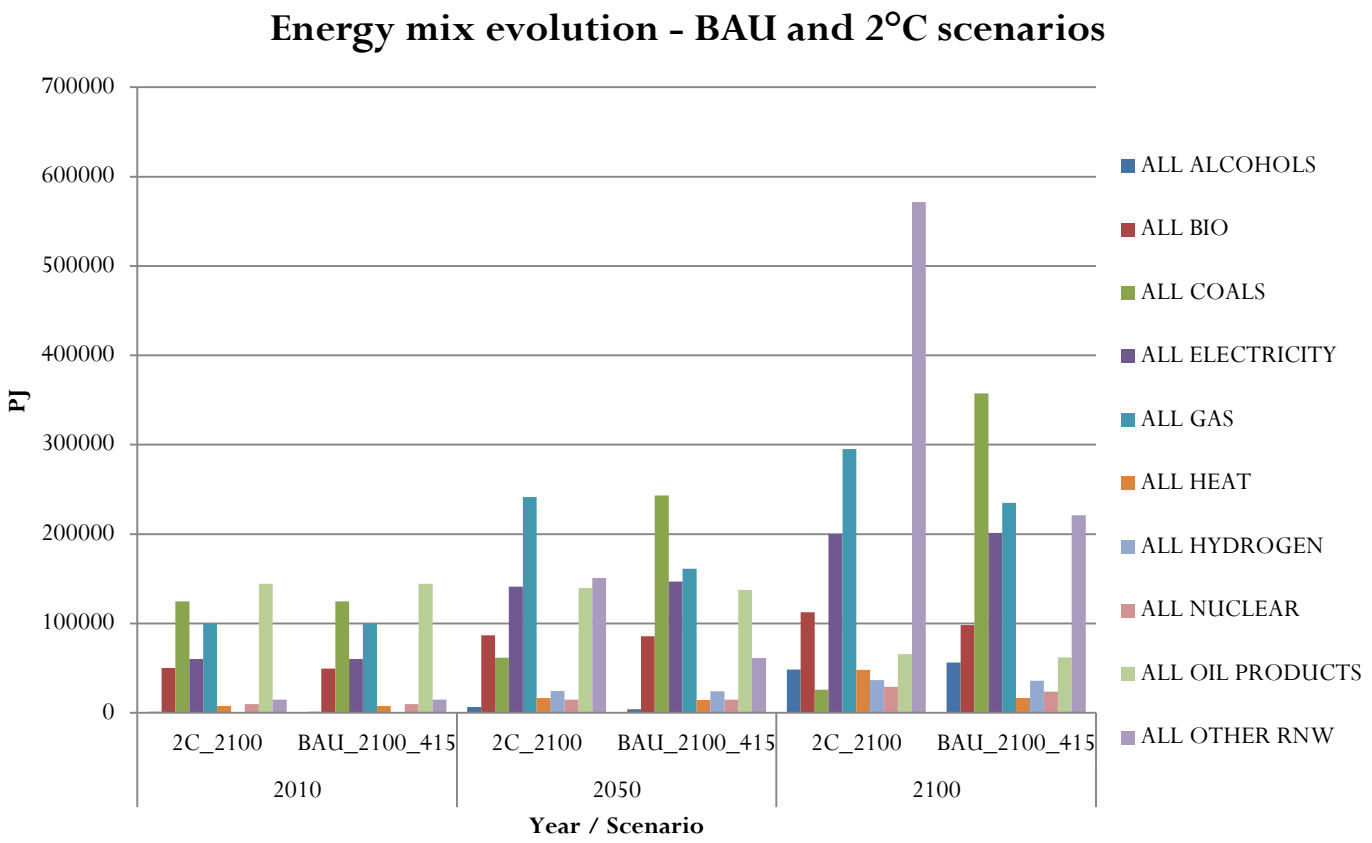
- Identification of « measure » articles
- Spot parameters put forward in the articles

From the map to TIAM FR (1/2)



Geographical zones of TIAM

From the map to TIAM FR (2/2)



Most important parameters (1/2)

Community parameters :

- Individual parameters : gender, age, level of education, political ideology or lack of knowledge and pre-conceived ideas on the project ;
- Projects parameters (projects' characteristics) : technology chosen, stakeholders involved, and communication on the project
- Local parameters : type of landscape, history of the region, power sources already in operation, etc.

Socio political parameters :

- General context :
  - Paris Agreement -> non-fossil energies
- Specific events :
  - Fukushima-Daishi nuclear disaster -> specific technologies

Most important parameters (2/2)

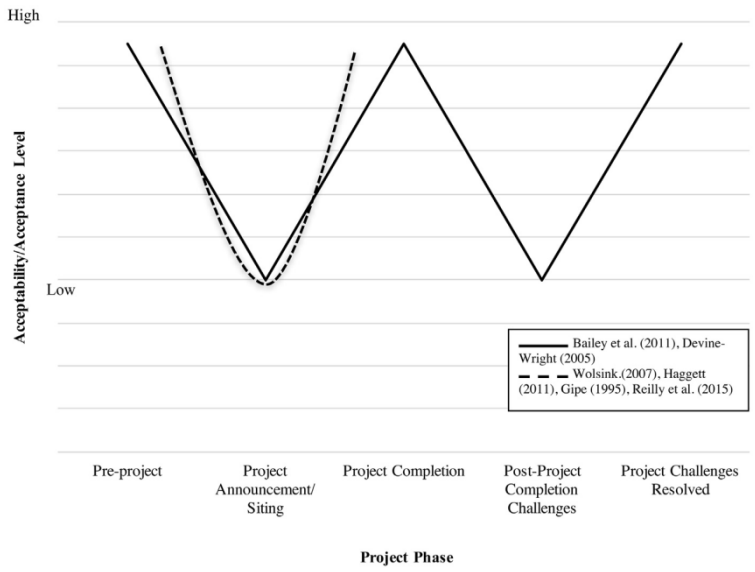
Market acceptance (technology):

- will of industrials to diffuse a technology
- will of customers to use it
- Opposition between :
  - envy for green power offers and
  - reluctance to local projects (NIMBY).

-> lack in green power

- intra-firm acceptance.

Dynamics of the acceptance



Dreyer et al, 2017 – Temporal change in acceptability and acceptance

Difficulties / lack of quantified data

- Qualitative parameters, but TIMES model is quantitative
- Few data in the literature
- Very diverse literature and methodology

-> non coherent set of data

Key issues (1/2)

- **A risk to forget developing countries in our analysis:**
  - In developed countries: the transition is mainly electric, from big thermal power plants toward small renewable installations.
  - In developing countries: the transition is mostly from firewood toward off-grid renewable power.

Key issues (2/2)

- **Focus on reducing of opposition:**

  Most articles focus on the ways to reduce opposition to a project. Our goal is to think of how to include this reluctance in our model.

- **Focus on citizens:**

  Articles often focus on citizens and not on the other stakeholders shaping projects, which can elude some of the important parameters.

Conclusion and Next steps

- **Conclusion :**
  - Very diverse and broad phenomenon
  - Qualitative phenomenon that will be difficult to quantify
- **Next steps:**
  - Understand the possibilities to modify of the TIMES/TIAM model

THANK YOU FOR YOUR ATTENTION

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